



ENVIROTEK LABORATORIES, INC.

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EPA ID # NJ01298 NJ DEP ID # 03048 NY ELAP ID # 12044

GROSS ALPHA REDUCTION TEST REPORT

Report # 16-101-Gross Alpha Reduction Test (Gravity Black Berkey Filter).
Customer Name: New Millennium Concepts, Ltd.
Report Date: 04/09/2016.

EXECUTIVE SUMMARY

Fifty gallons of tap water was spiked with Gross Alpha Standard Solution to have a final concentration of 100 ± 25 pCi/L, the spiked tap water was filtered through the filter element and tested; the Gross Alpha Standard Solution in the tap water was reduced by at least 98.7%.

INTRODUCTION

Fifty gallons of tap water was spiked with Gross Alpha Standard Solution to have a final concentration of 100 ± 25 pCi/L of Gross Alpha, the spiked tap water was filtered through the filter element, the spiked solution and the filtered solution were tested following the EPA method 900.0; the Gross Alpha Standard Solution in the tap water was reduced by more than 98.7%.

REAGENTS AND LAB EQUIPMENT

Gravity Black Berkey Filter.
Gross Alpha Standard Solution PoCl_4 0.1 $\mu\text{Ci/L}$ Eckert & Ziegler Isotope Products Catalog # 7310.
Gamma Products Alpha/Beta counter G5000W Counting System.
Type A glassware necessary to perform the EPA 900.0 method for drinking water analysis.

PROCEDURE

Fifty gallons of tap water was spiked with Gross Alpha Standard Solution in a Tank and mixed well; this solution was tested and adjusted to have a final concentration of 100 ± 25 pCi/L of Gross Alpha, the results are summarized in Table 1 below. The solution was filtered through the Black Berkey Filter and tested following the EPA method 900.0. The results are summarized in 2 below.

RESULTS

Table 1
Spiked Tap Water Properties

Parameter	Influent Water Properties	Target
pH	7.55	7.00 to 8.00
TDS	400 mg/L	200 to 500 mg/L
Temperature	21.5 °C	$20 \pm 2.5^\circ\text{C}$
Turbidity	0.65 NTU	< 1 Nephelometric Turbidity Units
Gross Alpha	100.5 pCi/L	100 ± 25 pCi/L
EPA Maximum Contaminant Level (MCL)	15 pCi/L	<5 pCi/L

Table 2
Gross Alpha Filtered Water Results

Parameter Tested	Gravity Black Berkey Filter Effluent Water Result	% Reduction
10 gallons	0.84 pCi/L	99.2 %
20 gallons	0.49 pCi/L	99.5 %
30 gallons	0.31 pCi/L	99.7 %
40 gallons	0.24 pCi/L	99.8 %
50 gallons	1.31 pCi/L	98.7 %



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CONCLUSION

The Gravity Black Berkey Filter reduced the Gross Alpha concentration in the tap water by at least 98.7 %. The EPA limit for Gross Alpha is 15 pCi/L; the Gravity Black Berkey Filter meets the EPA requirements for drinking water.

Potential gross alpha contaminants in water:

Gross Alpha emitters:

Americium-241
Mendelevium-258
Neptunium-237
Plutonium-238 and -239
Polonium-210
Protactinium-231
Radium-226 and -228
Thorium-232
Uranium-235 and -238

CERTIFICATION OF RESULTS:

I certify in writing that all analyses, and reporting performed herein, comply with all requirements set forth in N.J.A.C. 7:9E and N.J.A.C. 7:18, and hereby certify that this laboratory is in compliance with all laboratory certification and quality control procedures and requirements as set forth in N.J.A.C. 7:18; the NYCRR Subpart 55-2 and the National Environmental Laboratory Accreditation Conference (NELAC) Institute Standards.

Disclaimer: The test results are only related to the filter sample tested.

Jaime A. Young

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